Claims

1. A method for manufacturing of a packaging laminate (10) having a thin silicone oxide coating (16 and 17) formed on each side of a substrate plastics film (15),

which comprises a step for obtaining said silicone oxide coatings by means of vapor-depositing a silicon oxide coating (16, 17) onto each side of the substrate film (15) by a plasma chemical vapour deposition (PECVD) method while straining the film, within a range between an upper limit of an initial plastic deformation of the substrate determined by the Young modulus and a lower limit of any improvement of a cohesion force in the oxide coating and an adhesion force between the oxide coating and the substrate film.

2. The method according to Claim 1, wherein said silicon oxide coating comprises carbon-containing silicon oxide.

3. The method according to Claim 1 or 2, wherein said substrate film (15) comprises polyethylene terephthalate.

4. The method according to Claim 2 or 3, wherein said carbon-containing silicone oxide (16, 17) has the general composition formula;

SiO_xC_y, wherein x is within the range of 1.5-2.2 and y is within the range of 0.15-0.80.

5. The method according to any of Claims 2-4, wherein said carbon-containing silicone oxide layer (16, 17) is formed from a mixture of vaporized organic silicon compound and oxygen in vacuum, the organic silicon compound being tetrahexamethyl disiloxane.

6. The method according to any of Claims 2-5, wherein the cohesion strength in the carbon-containing silicone oxide layer (16, 17) is at least 5.7 GPa.

7. The method according to any of Claims 2-6, wherein the carbon-containing silicone oxide layer (16, 17) has at least 170 MPa of interface shear strength with the substrate film (15).

8. A packaging laminate including a substrate plastic film (15) having a thin silicone oxide layer (16, 17) formed on each side thereof, manufactured by the method according to any one of Claims 1-7.

9. A packaging laminate having a thin silicone oxide coating (16, 17) formed on each side of a substrate plastic film (15),

the silicone oxide coating formed on each side of the substrate film being a carbon-containing silicone oxide coating obtained by vapor deposition with a plasma chemical vapour deposition (PECVD) method,

said carbon-containing silicone oxide having the general formula;

SiO_xC_y in which x is within the range of 1.5-2.2 and y is within the range of 0.15-0.80,

the carbon-containing silicone oxide layers (16, 17) having a cohesion strength of at least 5.7 GPa.

10. The packaging laminate according to Claim 8 or 9, wherein the carbon-containing silicone oxide layers (16, 17) have an interface shear strength with the substrate film of at least 170 MPa.

11. The packaging laminate according to any of Claims 8-10, wherein the substrate film (15) comprises polyethylene terephtalate.

12. The packaging laminate according to any of Claims 8-11, wherein the laminate includes a paper or paperboard layer (12).

13. A packaging container comprising a flexible laminate (10) as defined in any of Claims 8-12.

14. A packaging container comprising a flexible laminate (10) shaped to form the packaging container,

said laminate having a carbon-containing silicone oxide coating formed on each side of a substrate film,

said carbon-containing silicon oxide coatings (16, 17) being formed by vapor deposition on the substrate film by a plasma chemical vapour deposition (PECVD) method while straining the substrate film (15), within a range between an upper limit of an initial plastic deformation of the substrate film (15) determined by the Young modulus and a lower limit of any improvement of the cohesion force of the

oxide coating (16, 17) and the adhesion force between the oxide coating (16, 17) and the substrate film (15).

15. The packaging container according to Claim 13 or 14, wherein the substrate film (15) comprises polyethylene terephthalate.

16. The packaging container according to any of Claims 13-15, wherein the carbon-containing silicone oxide has the general formula

SiOxCy in which x is within the range of 1.5-2.2 and y is within the range of 0.15-0.80.

17. The packaging container according to any of Claims 13-16, wherein the carbon-containing silicone oxide layer (16, 17) is formed from a mixture of a vaporized organic silicon compound and oxygen in vacuum and the organic silicon compound is tetramethyl disiloxane.

18. The packaging container according to any of Claims 13-17, wherein the cohesion strength in the carbon-containing silicone oxide layer (16, 17) is at least 5.7 GPa.

19. The packaging container according to any of Claims 13-18, wherein the carbon-containing silicone oxide layers (16, 17) has an interface shear strength with the substrate film of at least 170 MPa.

20. A package blank (2) having crease lines (3) and comprising a packaging laminate (10) having a thin silicone oxide coating (16, 17) formed on each side of a substrate plastic film (15),

the silicone oxide coatings (16, 17) formed on the substrate film (15) being carbon-containing silicone oxide coatings (16, 17) obtained by vapor deposition by the plasma chemical vapour deposition (PECVD) method,

the carbon-containing silicone oxide having the general formula;

SiOxCy in which x is within the range of 1.5-2.2 and y is within the range of 0.15-0.80,

and having at least 170 MPa of interface shear strength with the substrate film (15).

21. The package blank (2) according to Claim 20, wherein the cohesion strength in the carbon-containing silicone oxide layer (16, 17) is at least 5.7 GPa.